CeNCOOS Semi-Annual Report
Period: June 1, 2005 – November 30, 2005
The grant was awarded September 28, 2005
Questions to Heather Kerkering, heather@mbari.org or 831-775-1987

This semi-annual report for the NOAA CSC Award, NA05NOS4731123, is expected to cover the period of June 1, 2005 to November 30, 2005. The grant was awarded September 28, 2005. Therefore, the report below covers the progress of the Central and Northern California Ocean Observing System from September 28, 2005 to November 30, 2005 with respect to the funded CeNCOOS proposal.

Work funded by the NA05NOS4731123 3-year coordination grant began recently on September 28, 2005.

Progress on Regional Association Development

New Coordinator and Staff

Funding for CeNCOOS staff includes:

Full-time Coordinator:
Heather Kerkering replaced Stephanie Watson as the CeNCOOS Coordinator August 8, 2005. Stephanie resigned the position in May 2005. Heather joined after holding numerous marine research positions in the central California region and earning a masters degree in Coastal Environmental Management. Limited progress was made to advance CeNCOOS as a Regional Association during the three-month hiring interim. The focus of the new Coordinator is to meet certification criteria for regional associations, advance product development, and to engage and maintain relationships with stakeholders through outreach and education.

Oceanographer and Product Development Lead:
Dale Robinson joined CeNCOOS half time as the Oceanographer and Project Development Lead. Working from our partner organization San Francisco State University, Dr. Robinson is responsible for developing high quality data products selected for high end user groups, as identified during CeNCOOS site visits, stakeholder visits and through existing economic benefits studies. These products will help engage those end users as well as help augment a portfolio of example data products that CeNCOOS can use to engage additional stakeholders. In addition to the data product development, Dale will help coordinate the development of the CeNCOOS system implementation plan.

Outreach Specialist:
Rondi Robison joined CeNCOOS half time as an Outreach Specialist. Working from our partner institution, University of California, Santa Cruz, Ms. Robison's main tasks will

include: a) Chairing the CeNCOOS End User Committee; and b) acting as liaison between the End User Committee and the Product Development Team to ensure development of products that meet users' needs. The Outreach Specialist will also help the CeNCOOS Coordinator in the development of a CeNCOOS public relations package, outreach strategy, and user workshops.

Graduate Research Assistant (GRA):
Funds for the GRA are included in the subaward to University of California, Santa Cruz (UCSC). The GRA will help provide and maintain information on observing activities to the CeNCOOS geodatabase.
After the subaward was processed, a position announcement was advertised by UCSC Human Resources. CeNCOOS plans to hire the GRA in January 2006. The UCSC system operates in quarters; students will not be available until that time.

Ocean.US
November 2005 Mary Altalo and Jenny Thompson

- Held numerous conference calls with Ocean.US, particularly with the new Director, Mary Altalo and staff, Jenny Thompson. Rondi Robison and Kerkering participated from CeNCOOS.
- Discussed certification criteria and developing goals for IOOS and RAs.
- Communicated challenges in RA development

Governance Structure and Business Plan Development

Each Regional Association is charged with meeting governance and business plan criteria, established by Ocean.US, in order to be recognized as an official entity. Progress on the governance structure and business plan development are discussed below:

Governing Council formed
In January 2005, the CeNCOOS Governance and Business Plan Committee developed a Memorandum of Agreement (MOA) to initiate CeNCOOS and meet the Governance Certification Criteria for Regional Associations. The CeNCOOS MOA, based on the GoMOOS bylaws and the AOOS MOA, was closed for signing at the end of August 2005. Eighteen of the 28 organizations signed in August. The signatories include academic/research institutions, government agencies, industry and non-profit organizations.
The final signatories are:
CSU, East Bay
CSU, Monterey Bay
California State Polytechnic Institute
Humboldt State University
San Francisco State University/Romberg Tiburon Center
Moss Landing Marine Laboratories
University of California, Davis
University of California, Santa Cruz

Hopkins Marine Station, Stanford
Alliance of Coastal Technologies
DRI/Western Regional Climate Center
CODAR Ocean Sensors
Southwest Fisheries Science Center
Point Reyes National Seashore
California State Fish and Game
California Coastal Conservancy
National Estuarine Research Reserve
PRBO Conservation Science
Commonweal
San Francisco Marine Exchange
Monterey Bay Aquarium Research Institute
San Francisco Estuary Institute
San Francisco Estuary Project
Humboldt Bay Harbor, Recreation and Conservation
Pacific Coast Fishermen's Federation Association
Natural Resources Defense Council
Humboldt Bay Stewards
Fleet Numerical

Kerkering continues to expand the CeNCOOS membership to include a greater variety of stakeholders, increasing the number of programs coordinated, and facilitating interactions with other regional coordination activities along the west coast.

In September, each signatory was asked to nominate Council members from the list of signed organizations. After the nominations were complete, three representatives from each organization voted in the election. The Council members represent academic/research (5); government (5); industry (1); and non-profit (3) categories. The final 14 Council members were announced October 20, 2005. The Council members include:

Academic/Research	Government	Industry	Non-profit
Francisco Chavez	Sarah Allen	Laura Pederson	Michael Connor
Newell Garfield	Sheila Semans		Zeke Grader
John Largier	Gary Stacey		Paul Siri
Jeff Paduan	Churchill Grimes		
Mark Moline	Jeff Robinson		

The first Governance Council meeting is scheduled for December 1, 2005 in San Francisco. Committees and Chairs will be decided.

Kerkering, Robison and Robinson spent much of November preparing for the December 1st meeting. Much time was spent preparing relevant documents, creating the agenda, preparing presentations, and organizing the logistics.

November 8: Rondi and Heather

Vision Day

- Spent an entire day outlining the goals and visions of CeNCOOS.
- Prepared for the future in relation to product development, funding opportunities, outreach and increased stakeholder participation.
- Developed the Council meeting agenda and highlighted priorities for a developing RA.

Business Plan Development

CeNCOOS and the Southern California Ocean Observing System (SCCOOS) recently received funding from the Resources Legacy Fund Foundation to hire a consultant for the business plan. We are currently researching potential consultants. The goal is to have the business plan completed in early 2006. CeNCOOS has been developing a document of CeNCOOS partner capabilities in observations, DMAC, modeling, and outreach, as well as listing additional funding opportunities. This document will aid in the creation of the business plan.

A business plan is required for Regional Association certification. The business plan criteria are currently under modification at the national level. CeNCOOS is working with SCCOOS to create a draft business plan suitable to individual RAs as well as the overall state ocean observing efforts. This is a working document requiring continuous communication via phone, email, and face to face meetings.

September 12th and 20th, 2005: Met with Debbie Duckworth of SCCOOS.

- Evaluated business plan criteria and characteristics of SCCOOS and CeNCOOS.
- Discussed west coast industry workshop possibilities
- Determined our roles in the BP development
- Reviewed legislation affecting California

November 4, 2005: Met with Debbie Duckworth at SCRIPPS

- Reviewed developing business plan documents
- Determined future research needs and delegated responsibilities

CeNCOOS Development in the State

October 18 CICORE-CIMT workshop

CICORE: Center for Integrated Coastal Observation Research and Education
CIMT: Center for Integrated Marine Technology

- Began discussions of how to fold CIMT and CICORE programs under CeNCOOS for 2008
- Identified next steps, funding routes, and research priorities.
- Agreed that regional products should display a CeNCOOS logo.

November 2005 Sheila Semans, Becky Smyth and Paul Siri

- Continuously discussed the proposed California Coastal Ocean Observing System proposal.
- Evaluated the proposal in relation to the two developing regional associations in the state

Product Development

Product Development: oceanObs

CeNCOOS has a geodatabase, oceanObs (www.oceanobs.org), containing information about ongoing ocean observing activities in the region, which will be useful in constructing the business plan. oceanObs is a web-based information management and data discovery tool created to administer and provide access to the ocean observing programs that are part of the Integrated Ocean Observing System (IOOS). From the broadest perspective, oceanObs is a data management tool that allows a variety of user groups to catalogue, present, and query ocean observing information, such as sensor locations, observing parameters, collaborators, and data products. oceanObs does not integrate data streams from observing programs; rather it is a tool to manage metadata-level information about these programs. oceanObs is a versatile, multi-use system that allows observing program managers to administer metadata on their activities, while providing a means for coordinators of regional associations to query and report on programs in their respective areas. In addition, select information from regional ocean observing programs, such as how to access data products or the locations of specific data sensors, is available through a public web-based interface.

oceanObs was originally developed by the Sanctuary Integrated Monitoring Network (SIMoN), a program of the Monterey Bay National Marine Sanctuary (MBNMS), and the National Coastal Data Development Center (NCDDC) to manage information for the Central and Northern California Ocean Observing System (CeNCOOS). Together, these organizations designed a centralized database, a secure website, and an internet mapping application that provided the functionality necessary to manage information on the ocean observing programs in the CeNCOOS region. After incorporating feedback from various NOAA agencies involved in IOOS, the oceanObs system can now be employed by all of the regional associations of IOOS.

In late August, all CeNCOOS partners were invited to participate in oceanObs. A number of partners began inputting their data into oceanObs. Although partner response was slow, oceanObs was well received in the IOOS world and has been highlighted at a number of conferences and meetings. Most recently, oceanObs was discussed at the Eastern Pacific Ocean Conference in September and at the Estuary Research Federation Conference in October. Josh Pederson, the creator of oceanObs, also attended the OOS Tech meeting in D.C. as the CeNCOOS representative. The other regional associations are very interested in developing an oceanObs-like product for their region.

We are in the process of soliciting more partners to participate. With the new NOAA grant award, CeNCOOS will hire a graduate student to aid in outreach and data management with oceanObs. This position will be half time and begin early 2006.

OceanObs Meetings
October 3 Josh, Rondi and Heather

- Scripted GRA position description
- Identified criteria for improving the geodatabase

October19 Josh and Heather

- Reviewed progress of oceanObs and goals for the program and upcoming OOS Tech meeting in D.C.
- Began identifying changes needed on the CeNCOOS website and how to display oceanObs.

November 14 Josh, Rondi and Heather

- Brainstormed website design and potential improvements
- Received proposal from Josh to redesign the CeNCOOS website.

Data Integration subaward and Demonstration Projects

FNMOC respectfully declined the subaward due to decreased staff and time. CeNCOOS then worked with the Environmental Research Division (ERD) to develop a new plan for data integration. The outcome is described here.

October 21 FNMOC Mike Clancy, Mark Ignazewski, Rondi Robison, Heather Kerkering

- Mike and Mark described their relationship with CeNCOOS and the previous data integration plans made with Stephanie Watson.
- Mark Ignazewski, the DMAC Chair, indicated that little has happened with DMAC in the past year.
- Mike Clancy kindly declined the subaward funded in the FY06-08 grant for FNMOC to provide staff for data integration and supplying a server, GODAE.

October 21 ERD Roy Mendelssohn, Jerome King, Heather Kerkering, Rondi Robison, Francisco Chavez, Dave Foley, Frank Schwing, and Lynn DeWitt.

- CeNCOOS collaborated with ERD to begin product development. ERD wrote a proposal for a project technician contractor, Jerome King, to create a CeNCOOS-driven currents demonstration project. The proposal, requested by CeNCOOS, was due November 7, 2005. The proposal includes information on data availability and methods for data integration and project design. Toby Garfield (COCMP) will provide CODAR data; Dave Foley (in collaboration with Raphe Kudela) will provide satellite imagery; Francisco Chavez will provide mooring data from MBARI; and Rondi Robison will provide a list of variables identified by end users to guide the project design. Included in the proposal is a request for a new CeNCOOS computer to host the LAS and final product. Jerome King will

be the project technician and set up the CeNCOOS LAS. The project will be displayed in daily resolution and be made available on cencoos.org for public/end users. The project will fit in the budget, $78K, originally allotted to FNMOC. The funding will not to go to ERD but to the project technician, Jerome King, through a contract group, Aquatic Farms. Funds from the $18,000 supplies budget will be used to purchase computers and software necessary hosing a CeNCOOS LAS.

November 14, 2005 Proposal Received from ERD

- ERD submitted a final proposal to CeNCOOS for the $78,000 subaward.
- The proposal is currently under review.

CIMT Subaward

Continuous meetings throughout October to determine allocation of subaward funds

- Rewrite proposal for better allocation of funds
    - Funds allocated to data management, website design, and CIMT PIs.
- Budget justifications
- Statement of work for recipients of subaward
    - PIs include UCSC ocean observation scientists
        - PIs include Bruland, Croll, Kudela, Marinovic and Silver

Product Development Team formed

The three CeNCOOS staff members, Kerkering, Robinson, and Robison, formed the Product Development Team (PDT) with reception of the grant. The PDT met on numerous occasions to identify high priority product needs and potential data contributors and users.

Kerkering and Robinson communicate frequently regarding new data producer and user contacts. The PDT spoke and emailed often in the process of selecting ERD as the potential entity accepting the subaward and in reviewing and creating a response to the final proposal.

Kerkering and Robison continue to identify priority research topics for stakeholders in the region. In the CeNCOOS end user process, the end user group (led by Robison) identified group types (Federal, State, Local, Regional, non-profit, industry, public) that had been contacted in original needs effort to identify if there were groups not covered; broke down variables, uses specified and data types of product needs requests; broke out which organizations requested current information.

Additional Product Development Meetings

September 9 (Heather) and 22 (Rondi): Mike Godin, MBARI

What kind of information is helpful to data managers and product creators? How should the EUC process incorporate needs back to data developers and integrators? What do you like to know or need to know when creating something?

- Introduction to AOSN data integration effort
- LAS, MOQA, user interface TBD
- Adaptable to other

September 25 Roy Mendelssohn Santa Cruz visit

- ERD willing to help in short-term to serve data and develop LAS and oopenDap this could be done with major CeNCOOS partners then link it to ERD – MBARI - GODAE
- Need three things from user needs process
    - What is scope & scale
    - What is actual use of product
    - What are the parameters
- If Jeff Paduan were to provide real-time data PFEL would serve it up
- Currents and satellite would be a good first product
- He indicated that many of the needs requested by stakeholders already exist, we just need to identify how to get the needs to the stakeholder

September 27 – October: Data Tutorials: Jerome King, Rondi and Heather

- Provided explanation of LAS, OpenDap and THREDS
- Identification of efforts and contacts in region

October 6 John Graybeal cc Dale Robinson, Rondi Robison

- Data Integration process: recommendation of 8 possible modes, need to simplify, have organized and goal oriented meeting
- For product development he prefers to be tasked with the need and then get science and stakeholder input
- SSDS available later this year

August, September and October: Continuous data meetings with Francisco Chavez

- Updates on ocean observing technology and research
- Guidance regarding data integration and methods for product development
- Identification of PIs for potential products

September 30, 2005: Dale Robinson and Toby Garfield, COCMP
COCMP: Coastal Ocean Currents Monitoring Program
HF Radar Demonstration Product

- Discussed demonstration products using HF Radar that are valuable to user groups.
- Continue discussions with willing data providers to modify or expand existing projects. Identify any obstacles.

- Examined HF Radar products on the Internet to do a brief competitive analysis of user interfaces.
- Introduced several products that are possible and that might be useful for a variety of users (statistical analysis, GIS programs).

October 7, 2005: Dale Robinson, Toby Garfield, Mark Moline and Jeff Paduan, COCMP

- Explored ways in which the existing HF Radar products may be expanded or modified.
- Discussed how willing data providers are to modify or expand the existing products.
- Identified obstacles to modifying or expanding existing products.
- Discussed the pros and cons of a drifter simulation project and areas for improvement.
- Examined the UConn and Rutgers University demonstration with the USCG as a model for CeNCOOS.

Education

September 22, 2005: Leslie Sauter
September 28, 2005: Follow-up with Jeff Paduan

- Discussed role of ocean observing systems with Leslie's undergraduate research Transect Program. The program allows undergraduate researchers to gather consistent oceanographic data in the Monterey Region. The Transect Program already exists on the east coast.
- Discussed with Jeff Paduan avenues for funding educational activities valuable to ocean observing efforts.

November 7, 2005 Robison, Kerkering and George Matsumoto

- Rondi and Heather met with George Matsumoto, Education Specialist for MBARI, to discuss education and outreach strategies for CeNCOOS.

November 8, 2005: Robison and Kerkering

- Vision Day exercise.
- Developed outreach strategy and ideas for public relations package

Regional Association Conference Calls

Regional Outreach (WOO) meetings and calls:
October 3 cc Becky Smyth, Rebecca Pollock, Sheila Semans, Heather Kerkering, Rondi Robison

- CalCOOS report available for Review till Nov. 28
- Update from recent meetings and conferences
    - NFRA
        - Mary Altalo is new Director of Ocean.US
        - Certification process is begin identified for RAs
    - Ocean Protection Council
        - Introduction of CalCOOS to the state of California

Regional Association Conference Call: October 6, 2005 (September meeting delayed)

- Tom Malone introduced the new Ocean.US Director, Dr. Mary Altalo. Dr. Altalo will officially become the new Director of Ocean.US effective December 1, 2005.
- The Senate has moved forward on the Appropriations bill, and has named conferees. There is skepticism about the commerce bill because of large difference in numbers: The Senate bill (Sen. Snowe) authorizes $150 million compared to $35 M in the House bill.
- All of the RAs have been awarded. The last one to be awarded was the CeNCOOS on 28 September 2005.
- It is recommended in the IOOS Plan that a process be put in place for certifying RAs. Tom Malone expressed concern that the word "certification" may not be the right word since the initial goal is to qualify RAs for certification. Ocean.US will develop a draft process of qualifying as an RA,

Regional Association Conference Call: October 25, 2005

- No update on legislation and appropriations. House and Senate are trying to reconcile differences in proposed IOOS funding.
- RAs should identify projects in their region that support their ocean observing program.
- Jenny Thompson and Mark Altalo will be visiting each RA in the next few months.
- IOOS had a successful session at the ERF conference in Norfolk, VA.
- Discussion of alternative ways to include federal organizations on RA boards. Should oceans.US develop an MOA at a national level rather than at a regional level to work with federal issues?
- Received feedback on IOOS efforts from the Gulf region's American Shore and Preservation Association.

<u>Public Relations Package Development:</u>

September 28: Poster and flyers for Eastern Pacific Ocean Conference
October 18: Poster for Estuary Research Federation Conference

<u>Conferences Attended</u>:

State of the Estuary Conference (Robinson)
October 4-6: San Francisco, CA
Estuarine Research Federation Conference (Drew Talley) (Poster)
October 18: Norfolk, VA

OOS Tech Meeting (John Graybeal and Josh Pederson)
October 24-25: Baltimore, MD
IOOS DMAC Steering Committee (John Graybeal and Dave Foley)
November 1-3: Washington, D.C.
QARTAD Meeting (Kerkering)
November 2-4: San Diego, CA
COCMP State Review (Kerkering and a various Council members)
November 15: San Francisco, CA
Science and Technology in GEOSS: The Role of Universities
November 21-23: San Diego, CA

November 14: Josh Pederson, John Graybeal, Kerkering and Robison

- Met to review conferences attended
- Discuss data integration strategies, marine metadata initiatives, and product development

Upcoming Conferences

PaCOOS Meeting: San Diego, CA
CalCOFI Conference: San Diego, CA
California Marine Habitat Mapping Conference: Seaside, CA
IOOS Strategy Session: Washington D.C.
Ocean Protection Council Meeting: Santa Barbara, CA
IOOS Public Health Workshop: St. Petersburg, FL (Poster or Presentation)
Ocean Sciences Conference: Honolulu, HI (Poster or Presentation)
NFRA Meeting: Washington D.C.

Actions
Response to the state's CalCOOS proposal was submitted by CeNCOOS on November 28, 2005. The California Coastal Conservancy and the California Ocean Protection Council receive the response.

Rondi Robison provided the CeNCOOS end user reports and data to the Coastal Conservancy for the COCMP review on November 16, 2005. The end user reports were presented at the COCMP review by Toby Garfield and Jeff Paduan. Sheila Semans from the Coastal Conservancy also presented the information in document form.

Kerkering continuously updates the web page and communicates with CeNCOOS partners via email. Many presentations and upcoming events are posted online. Additionally, stakeholders throughout the region are continuously invited to sign the CeNCOOS MOA.

The Future:

Funds from the 3-year grant will aid in meeting CeNCOOS priorities in coordination, product development and advancement as a regional association.

CenCOOS Priorities for Ocean Observation
Observations

- Coordinate with ORION
- Maintain and enhance NDBC buoys and coordinate with DART
- Expand CalCOFI/PaCOOS coverage
- Find avenues to federally support other existing programs and their oceanographic efforts, including federal support for remote observing technologies.
- Ensure long term support for satellite altimetry, SST, ocean color, and scatterometry, with science data quality validation and long term archival of data.
- Capitalize upon the State of California's investment in High Frequency (HF) radar and associated technologies. Provide funding through RAs for operation and maintenance of COCMP, as part of the HF effort. Make the National Surface Current Mapping Initiative fully operational.
- Maintain and expand coastal monitoring stations, which include temperature, salinity and tidal height.
- Maintain existing observing efforts
- Enhance in situ data collection (physical, chemical and biological)
- Enhance remote sensing capabilities

DMAC

- Provide metadata guidance and support interoperability demonstrations
- Identify data model standards and common data handling protocols
- Develop mature data management and communications tools
- Develop a standardized framework for different levels of quality control standards and protocols.
- Ensure sufficient bandwidth for data communications.
- Demonstrate enhanced data products using gridded and non-gridded data from the national backbone. Focus on a common interface that stakeholders can use and recognize as part of IOOS.
- Make data available via internet accessible services
- Participate in IOOS interperability demonstrations and MMI demonstrations
- Inclusion of the State of California data and data management efforts

Modeling

- Demonstration product on currents. Includes CODAR data, satellite imagery and mooring data. Aids in transport, search and rescue, navigation, invasive species.
- Data products for end users from existing models (ERD, AOSN, TOPP)
- Develop sediment transport model for end users
- High resolution oil spill models that are user-friendly
- Operational ecosystem model.
- Update and validate existing models
- Focus on stakeholder engagement (industry and resource managers)

- Hold a focused end user workshop in four sub-regions of CeNCOOS (North coast, SF Bay, Monterey Bay, and Morro Bay/San Luis Bay)
- Develop a CeNCOOS exhibit
- Develop a 'State of the Region' website and products to aid the Marine Life Protection Act project.
- Develop data products by integrating available data in the region.

Issues, Challenges and Opportunities

Issues that need to be resolved:

- Federal participation in the RAs that does not send mixed messages to the stakeholders and allows equal participation in all RA/RCOOS.
- Coordination with the State's new effort, CalCOOS
- Insufficient funding
- Liability issues
- Certification criteria for ocean. us

Challenges:

- Lack of leadership on the federal government level. For example, not making clear or attempting to resolve the issue of federal participation. Additionally, there is no certifying body at ocean.us or official business plan criteria.
- Inability to identify methods for data integration.
- Lack of funding. It is difficult to create products and engage stakeholders without any long-term security. PIs and CeNCOOS enthusiasts are skeptical of IOOS and therefore, losing enthusiasm and devotion to the plan.
- Engagement of industry

Regional and local funding opportunities (examples):

- California Ocean Protection Act trust fund
- Local: Moore, Resources Legacy Foundation, CA Coastal and Marine Institute
- Regional Water Boards
- Office of OSPR
- NMS and National Estuary Project Funding
- CALFED RFP
- California Boating and Waterways funding